This Adjustment manual applies to machines from software version 0335/009 and serial number 6 001 000 onwards
The reprinting, copying or translation of PFAFF Adjustment Manuals, whether in whole or in part, is only permitted with our previous authorization and with written reference to the source.

PFAFF Industrie Maschinen AG
Postfach 3020
D-67653 Kaiserslautern
Königstr. 154
D-67655 Kaiserslautern
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Adjustment ................................................................. 14 - 1</td>
</tr>
<tr>
<td>14.01</td>
<td>Notes on adjustment .................................................. 14 - 1</td>
</tr>
<tr>
<td>14.02</td>
<td>Tools, gauges and other accessories ............................. 14 - 1</td>
</tr>
<tr>
<td>14.03</td>
<td>Abbreviations .............................................................. 14 - 1</td>
</tr>
<tr>
<td>14.04</td>
<td>Explanation of the symbols .............................................. 14 - 1</td>
</tr>
<tr>
<td>14.05</td>
<td>Basic position of the machine ........................................ 14 - 2</td>
</tr>
<tr>
<td>14.06</td>
<td>Work clamp zero point .................................................. 14 - 3</td>
</tr>
<tr>
<td>14.07</td>
<td>Aligning the work clamp .............................................. 14 - 5</td>
</tr>
<tr>
<td>14.08</td>
<td>Hook driver ..................................................................... 14 - 7</td>
</tr>
<tr>
<td>14.09</td>
<td>Needle height .................................................................. 14 - 8</td>
</tr>
<tr>
<td>14.10</td>
<td>Hook-to-needle clearance ................................................ 14 - 9</td>
</tr>
<tr>
<td>14.11</td>
<td>Needle rise and needle guard .......................................... 14 - 10</td>
</tr>
<tr>
<td>14.12</td>
<td>Aligning the hook race cover ......................................... 14 - 11</td>
</tr>
<tr>
<td>14.13</td>
<td>Work clamp height .......................................................... 14 - 12</td>
</tr>
<tr>
<td>14.14</td>
<td>Position of the thread wiper ........................................... 14 - 13</td>
</tr>
<tr>
<td>14.15</td>
<td>Position of the control cam ............................................ 14 - 14</td>
</tr>
<tr>
<td>14.16</td>
<td>Position of the control roller .......................................... 14 - 15</td>
</tr>
<tr>
<td>14.17</td>
<td>Position of the drive shaft of the thread trimmer ............... 14 - 16</td>
</tr>
<tr>
<td>14.18</td>
<td>Aligning the stop plate .................................................. 14 - 17</td>
</tr>
<tr>
<td>14.19</td>
<td>Adjusting the trimmer solenoid ....................................... 14 - 18</td>
</tr>
<tr>
<td>14.20</td>
<td>Adjusting the engaging lever .......................................... 14 - 19</td>
</tr>
<tr>
<td>14.21</td>
<td>Position of the thread catcher and knife .......................... 14 - 20</td>
</tr>
<tr>
<td>14.22</td>
<td>Position of the release trip ............................................. 14 - 21</td>
</tr>
<tr>
<td>14.23</td>
<td>Position of the release catch .......................................... 14 - 22</td>
</tr>
<tr>
<td>14.24</td>
<td>Needle thread tension release ......................................... 14 - 23</td>
</tr>
<tr>
<td>14.25</td>
<td>Thread check spring and thread regulator ........................ 14 - 24</td>
</tr>
<tr>
<td>14.26</td>
<td>Bobbin winder drive wheel ............................................. 14 - 25</td>
</tr>
<tr>
<td>14.27</td>
<td>Work clamp initiator ..................................................... 14 - 26</td>
</tr>
<tr>
<td>14.28</td>
<td>Changing the work clamp ............................................... 14 - 27</td>
</tr>
<tr>
<td>14.29</td>
<td>Cold start ....................................................................... 14 - 28</td>
</tr>
<tr>
<td>14.30</td>
<td>Internet update of the machine software ........................... 14 - 29</td>
</tr>
<tr>
<td>14.31</td>
<td>List of parameters .......................................................... 14 - 30</td>
</tr>
<tr>
<td>14.32</td>
<td>Error messages on the display .......................................... 14 - 37</td>
</tr>
<tr>
<td>14.33</td>
<td>Sewing motor errors ....................................................... 14 - 38</td>
</tr>
<tr>
<td>14.34</td>
<td>OTE-errors .................................................................... 14 - 38</td>
</tr>
<tr>
<td>15</td>
<td>Circuit diagrams ............................................................. 15 - 1</td>
</tr>
</tbody>
</table>
Adjustment

14 Adjustment

Please observe all notes from Chapter 1 Safety of the instruction manual! In particular care must be taken to see that all protective devices are refitted properly after adjustment, see Chapter 1.06 Danger warnings of the instruction manual!

If not otherwise stated, the machine must be disconnected from the electrical power supply.

14.01 Notes on adjustment

All following adjustments are based on a fully assembled machine and may only be carried out by expert staff trained for this purpose.

Machine covers, which have to be removed and replaced to carry out checks and adjustments, are not mentioned in the text.

The order of the following chapters corresponds to the most logical work sequence for machines which have to be completely adjusted. If only specific individual work steps are carried out, both the preceding and following chapters must be observed.

Screws, nuts indicated in brackets ( ) are fastenings for machine parts, which must be loosened before adjustment and tightened again afterwards.

14.02 Tools, gauges and other accessories

- 1 set of screwdrivers with blade widths from 2 to 10 mm
- 1 set of spanners with jaw widths from 7 to 14 mm
- 1 set of Allen keys from 1.5 to 6 mm
- 1 metal ruler, part no. 08-880 218-00
- 1 machine zero point gauge, part number 61-111 637-08

14.03 Abbreviations

t.d.c. = top dead centre
b.d.c. = bottom dead centre

14.04 Explanation of the symbols

In this adjustment manual, symbols emphasize operations to be carried out or important information. The symbols used have the following meaning:

- Note, information

- Service, repair, adjustment, maintenance
  (work to be carried out by qualified staff only)
14.05 Basic position of the machine

**Requirement**
After the machine has been switched on, it should position in t.d.c. needle bar.

- Switch on the machine.
- Hold clutch 1 (screws 2) and bring the needle bar into the appropriate position by turning the balance wheel.
- Switch off the machine.

The distance from the clutch 1 to the motor plate should be **3.5 mm**.

In the direction of rotation the second screw of the clutch section 3 should be on the surface of the motor shaft.
The clutch section 1 should be touching the 0-ring of the axial bearing.
Adjustment

14.06 Work clamp zero point

Requirement
After the machine has been switched on and parameter "608" selected,
1. the needle should be centred to the hole in the adjustment gauge,
2. the switch lugs 2 and 4 should be centred to the respective initiator.

Fig. 14 - 02

When removing the work clamp holder, take care that the ball bearings in the arm support do not drop out!

- Remove the work clamp holder and the lower feed plate.
- Screw adjustment gauge 1 (part no. 61-111 637-08) to the work clamp drive unit.

Preliminary adjustment
- Move the work clamp drive unit by hand in accordance with requirement 1.
- Adjust switch lug 2 (screw 3) and switch lug 4 (screw 5) in accordance with requirement 2.
Fine adjustment

- Switch on the machine.
- In the input mode, select parameter "608", see Chapter 11.03 Parameter input in the instruction manual.
- If necessary, enter the access code, see Chapter 11.04.01 Entering the access code in the instruction manual.
- With the corresponding plus/minus key move the work clamp drive unit in accordance with requirement 1, also see Chapter 11.03 Parameter input.
- Switch off the machine.
- Remove adjustment gauge 1.
- Fit the lower feed plate and work clamp holder.

If, during the fine adjustment, the setting is ± 5 increments above or below the value in X- and Y-direction, the setting should be checked again in accordance with requirement 2.
14.07 Aligning the work clamp

**Requirement**
The work clamp should be aligned in "X" and "Y" direction, so that it does not touch the needle during sewing.

- Switch on the machine.
- Set the sewing area size (see Chapter 9.07 Adjusting the size of sewing area in the instruction manual)
- In the input mode, select parameter "610", see Chapter 11.03 Parameter input in the instruction manual
- If necessary, enter the access code, see Chapter 11.04.01 Entering the access code in the instruction manual.
- Align work clamp 1 (screw 2) so that the needle hole 3 is in the centre of the work clamp cutout.

**Checking the "Y-direction"**
- To check this adjustment, move along the maximum set sewing area size in "Y-direction" by pressing the corresponding plus/minus keys (readjust if necessary).
adjustment

- Call up parameter "609".

Checking the "X-direction"
- Move along the maximum set sewing area size in "X-direction" by pressing the corresponding plus/minus keys.
- If necessary adjust the position of work clamp 1 by entering a correction value "X" with the corresponding plus/minus keys in "X-direction" in accordance with the requirement.

- Conclude the input.

When using the max. sewing area size (X=40mm, X=20 mm), the correction value under parameter "609" must be set at '0'.

Adjustment

14.08 Hook driver

Requirement
1. When the balance wheel is turned, the machine should not bind.
2. The play of catch 7 should be less than 0.1 mm.

- Remove the hook.
- Loosen screws 1, 2 and 3 (remove motor 4).
- Move the eccentric shaft 5 in accordance with requirement 1 and twist it in accordance with requirement 2.
- Tighten screws 1 and 3.
- Move adjustment ring 6 against the metal edge and tighten screw 2.
- Insert the hook.

If catch 7 has too much play, the running noise of the machine increases. Too little play may cause the machine to jam.
14.09 Needle height

**Requirement**
With the needle bar in b.d.c., depending on the sub-class the marking on needle bar 1 described below should be flush with the lower edge of the needle bar bush:
- Sub-class -1/01 top marking,
- Sub-class -1/11 second marking from the bottom.

- Adjust needle bar 1 (screw 2) in accordance with the requirement.
14.10 Hook-to-needle clearance

Requirement
When the bottom marking of the ascending needle bar is level with the lower edge of the needle bar bush
1. hook 5 should be **0.05 – 0.1 mm** behind the needle and
2. the distance between the needle and the tip of the hook race should be **7.5 mm**.

- Loosen screws 1, 2 and 3.
- Turn the eccentric pin 4 in accordance with the **requirements**.
- Tighten screws 2 and 3.

Screw 1 remains loosened for further adjustments.
14.11 Needle rise and needle guard

**Requirement**
When the bottom marking of the ascending needle bar is level with the lower edge of the needle bar bush
1. the hook point should be centred to the needle and
2. the needle guard (see arrow) should slightly touch the needle.

- Turn catch 1 (screw 2) in accordance with **requirement 1**, or move it in accordance with **requirement 2**.
Adjustment

14.12 Aligning the hook race cover

Requirement
The needle should be centred to cutout B and the rear side of the needle flush to the imaginary line A.

- Move the hook race cover 1 (screws 2) in accordance with the requirement.
14.13 Work clamp height

Requirement
1. The work clamp should be 13 mm above the upper edge of the needle plate.
2. Both halves of the work clamp should be parallel to each other.

- Turn lever 1 (nut 2 and screw 3) in accordance with requirement 1.
- Move lift plate 4 (screws 5) in accordance with requirement 2.

After aligning the work clamp, it is imperative to check the position of the thread wiper, see Chapter 14.14. Position of the thread wiper! Danger of needle breakage!
14.14 Position of the thread wiper

**Requirement**
When the thread wiper is centred to the needle, its lower edge should be 14 – 15 mm above the upper edge of the needle plate.

- Bring the thread wiper 1 into the appropriate position by operating the work clamp manually.
- Move thread wiper 1 (screw 2) in accordance with the requirement.
14.15 Position of the control cam

**Requirement**
1. The markings on control cam 1 and arm shaft 3 should correspond with each other.
2. The outer edge of control cam 1 should be at a distance of **32.5 mm** from the metal surface of the case.

- Turn control cam 1 (screw 2) in accordance with requirement 1, or move it in accordance with requirement 2.
14.16 Position of the control roller

Requirement
When the needle bar is at its b.d.c., the control roller should be centred to the running path of control cam 2.

- Turn screw 3 (nut 4) in accordance with the requirement.
- For checking purposes, operate lever 1 by hand to let the control roller fall into the running path of control cam 2.
14.17 Position of the drive shaft of the thread trimmer

**Requirement**
When the thread trimmer is in its basic position, shaft 1 should be flush with the metal edge of the machine case.

- Move shaft 1 (screws 2 and 3) in accordance with the requirement.
14.18 Aligning the stop plate

**Requirement**
When the thread trimmer is in its basic position, there should be a clearance of 0.3 mm between lever 3 and plate 1.

- Move plate 1 (screws 2) in accordance with the requirement.
Adjusting the trimmer solenoid

Requirement
When the thread trimmer is in its neutral position, solenoid 1 should be at a distance of 5 mm from the case.

- Turn nut 1 (nut 2) in accordance with the requirement.
Adjustment

14.20 Adjusting the engaging lever

Requirement
When the thread trimmer is in its neutral position, pin 3 should be at a distance of 0.5 mm from release trip 4.

- Move lever 1 (screws 2) in accordance with the requirement.
14.21 Position of the thread catcher and knife

**Requirement**

When the machine is in its basic position

1. the tip of the thread catcher 1 should be at a distance of 4.5 mm from the centre of the needle hole.
2. The blade of knife 3 should be at distance of 0.5 mm from the needle plate insert.

- Adjust thread catcher 1 (screw 2) in accordance with requirement 1.
- Adjust knife 3 (screws 4) in accordance with requirement 2.
14.22 Position of the release trip

**Requirement**
The slots of trip 1 should be touching screws 2 on the right side.

- Move trip 1 (screws 2) in accordance with the requirement.

- If the needle thread is too short after trimming, trip 1 can be slightly readjusted.
14.23 Position of the release catch

Requirement
When lever 6 is touching release catch 7, there should be a distance of 0.3 mm between drive lever 5 and pin 1.

- Turn the balance wheel until pin 1 is no longer on the release trip 2.
- Release spring 3 and loosen screws 4.
- In accordance with the requirement, place the feeler gauge between the drive lever 5 and pin 1.
- Push lever 6 lightly in the direction shown by the arrow.
- Move release catch 7 against lever 6 and tighten screws 4.
- Remove the feeler gauge and attach spring 3.

⚠️ Spring 3 should only be released and attached with suitable tools!
Danger of injury!
14.24 Needle thread tension release

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>After thread trimming the distance $X$ between tension discs 3 should be 0.6 – 0.8 mm for normal materials and 0.8 – 1.0 mm for heavy materials.</td>
</tr>
</tbody>
</table>

- Bring the machine into the cutting position by hand.
- Move lever 1 (screw 2) in accordance with the requirement.
14.25 Thread check spring and thread regulator

**Requirement**
1. The thread check spring 1 should have a 6 – 8 mm stroke.
2. Screw 4 should be positioned in the centre of the slot of thread regulator 3.

- Adjust thread check spring 1 (screw 2) in accordance with **requirement 1**.
- Move thread regulator 3 (screw 4) in accordance with **requirement 2**.

Turn pin 5 to adjust the thread spring resistance. All settings of the thread check spring 1 depend on the material and might have to be corrected to achieve the desired result.
Adjustment

14.26 Bobbin winder drive wheel

Requirement
1. There should be a distance of approx. 10.5 mm between drive wheel 1 and the metal edge of the machine case.
2. When the bobbin winder is switched on, its friction wheel should be driven by drive wheel 1. When the bobbin winder is switched off, drive wheel 1 must not touch the friction wheel of the bobbin winder.

- Adjust drive wheel 1 (screw 2) in accordance with the requirements.
14.27 Work clamp initiator

Requirement
When the work clamp is lowered and shortly before lever 5 in the machine arm touches stop 6, the initiator should switch on (input “3” parameter “601” is positioned at “off”).

- Switch on the machine and press the “TE” key.
- Lower the work clamp by pressing the “tacting forwards” key.
- With the clamp in this position, press the “TE” key.
- In the input mode, select parameter “601”, see Chapter 11.03 Parameter input in the instruction manual.
- Select input “3” with the corresponding plus/minus key.
- If necessary, enter the access code, see Chapter 11.04.01 Entering the access code in the instruction manual.
- Move cam switch 1 by hand and check the ON/OFF switch position on the display.
- Adjust support 2 (screws 3) and cam switch 1 (screws 4) in accordance with the requirement.
- Switch off the machine.
14.28 Changing the work clamp

- Measure the cutout of the new work clamp in X- and Y-direction.
- Adjust the sewing area size as described in Chapter 9.07 of the instruction manual.
- Fit the new work clamp and align it in as described in Chapter 14.07.
- Select the seam program to match the work clamp cutout (see Chapter 9.06 of the instruction manual).
- Check the seam program by tacting (see Chapter 7.04 of the instruction manual).

⚠️ If the actual size of the sewing area differs from the size entered, serious damage can be caused to the machine!
14.29 Cold start

When a cold start is carried out, the seam patterns 50 – 99 and all altered parameter settings are deleted! The machine is reset to its condition on delivery, the machine’s zero points remain unaffected.

- Switch on the machine.
- Select parameter '607' with the corresponding plus/minus keys.
- If necessary, enter the code, see Chapter 11.04.01 Entering the access code in the instruction manual.
- With the corresponding plus/minus key carry out the reset operation.
- Switch the machine off and on again after approx. 3 seconds.
14.30 Internet update of the machine software

The machine software can be updated with PFAFF flash programming. For this purpose the PFP boot program and the appropriate control software for the machine type must be installed on a PC. To transfer the data to the machine, the PC and the machine control unit must be connected with an appropriate null modem cable (part no. 91-291 998-91).

The PFP boot program and the control software of the machine type can be downloaded from the PFAFF-homepage using the following path:
www.pfaff-industrial.com/de/service/download/steuerungssoftware.html

To update the machine software carry out the following steps:

While the machine software is being updated, no setting up, maintenance or adjustment work may be carried out on the machine!

- Switch off the machine.
- Connect the PC (serial interface or appropriate USB-adapter) and the machine control unit (RS232). To do so disconnect the plug of the control panel.
- Switch on the PC and start the PFP boot program.
- Select the machine type.
- Press the "programming" button.
- Switch on the machine, keeping the boot key 1 pressed.
- Press the "OK" button.
- The software update is carried out, the update progress is shown on the bar display of the PFP boot program.
- When the update has been completed, switch off the machine and end the PFP boot program.
- End the connection between the PC and the machine control unit and reconnect the control panel to the machine control unit.
- Switch on the machine.
  A plausibility control is carried out and, if necessary, a cold start.

More information and assistance is at your disposal in the file "PFPHILFE.TXT", which can be called up from the PFP boot program by pressing the "help" button.
14.31 List of parameters

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Setting range</th>
<th>Set value</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>001</td>
<td>Maximum speed</td>
<td>500 – 2700</td>
<td>2700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This parameter is used to fix the max. sewing speed (upper limit).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>002</td>
<td>Sewing speed for start stitches</td>
<td>500 – 2700</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With this parameter the speeds for the 5 start stitches are fixed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed (spm) for start stitch no. 1</td>
<td>500 – 2700</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed (spm) for start stitch no. 2</td>
<td>500 – 2700</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed (spm) for start stitch no. 3</td>
<td>500 – 2700</td>
<td>2700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed (spm) for start stitch no. 4</td>
<td>500 – 2700</td>
<td>2700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed (spm) for start stitch no. 5</td>
<td>500 – 2700</td>
<td>2700</td>
</tr>
<tr>
<td>03</td>
<td>003</td>
<td>Locking/releasing seam patterns</td>
<td>ON – OFF</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This parameter is used to release (ON) or lock (OFF) the individual seam patterns (0 to 99) to be carried out in the sewing mode.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>004</td>
<td>Switch bobbin thread counter on/off</td>
<td>ON – OFF</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Standard value (pieces per bobbin)</td>
<td>1 - 9999</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In the sewing mode, the bobbin thread counter counts the pieces sewn backwards from the standard value. If the bobbin thread counter is switched on, in the sewing mode a signal is given when the value 0 is reached.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>006</td>
<td>Reversing after thread trimming</td>
<td>ON – OFF</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reverse position [*]</td>
<td>0 – 14</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With this parameter it is possible to switch the automatic reversing function after thread trimming on or off. If the reversing function is switched on, the reverse position can be set by turning the balance wheel. The access code is necessary for this adjustment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>007</td>
<td>Starting point = scale reference point</td>
<td>ON – OFF</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With this parameter it is possible to choose whether the scale reference point is the starting point (ON) or the zero point (OFF).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Adjustment

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Setting range</th>
<th>Set value</th>
</tr>
</thead>
</table>
| 000   | 008       | Speed for the "winding" function  
This parameter is used to fix the speed for the winding operation. | 500 – 2700 | 1500 |
| 009   | **Via zero point to starting point after end of sequence**  
With this parameter it is possible to choose that, after the end of the sequence, the X-, Y-drive moves to the seam starting point via the reference initiators. | ON – OFF | OFF |
| 010   | **Via zero point to starting point after number of program cycles**  
**Number of program cycles**  
With this parameter it is possible to choose that, after a certain number of program cycles, the X-, Y-drive moves to the seam starting point via the reference initiators. | ON – OFF  
1 - 100 | OFF |
| 011   | **Pedal mode**  
Switchover between level mode (0) and flip flop mode (1). | 0 – 1 | 0 |
| 012   | Needle or balance wheel position in degrees | 0 - 360 | 11 |
| 013   | **NIS "needle in material" [°]**  
This parameter is used to set the NIS signal. If the function is executed, the position can be entered by turning the balance wheel. If the position is altered, the result is a change in the point of time when the carriage is moved. The access code is necessary for this adjustment. | 65 – 166 | 107 |
| 014   | **Thread trimming speed [min-1]**  
This parameter is used to fix the speed for thread trimming. | 100 – 700 | 300 |
| 015   | **Reduced current for stepping motors**  
The reduction function of the holding current at rest with closed work clamp is switched on or off. | ON – OFF | ON |
| 016   | **Key tone**  
The key tone, as reaction to a key on the control panel being pressed, is switched on or off. The double tone for incorrect inputs always remains switched on. | ON – OFF | ON |
### Adjustment

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Setting range</th>
<th>Set value</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>017</td>
<td>Clamp solenoid Operating time [10 ms]</td>
<td>5 – 100</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The time, for which the solenoid is under full current, is entered.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>018</td>
<td>Clamp solenoid duty-cycle [%]</td>
<td>5 – 100</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>At the end of the clamp solenoid operating time (Parameter '017') the solenoid is clocked. The relationship between duration of operation and non-operation is entered here.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>019</td>
<td>Thread trimming solenoid operating time [10 ms]</td>
<td>5 – 100</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The time, for which the solenoid is under full current, is entered.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>020</td>
<td>Thread trimming solenoid duty-cycle</td>
<td>5 – 100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>At present without a function</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>021</td>
<td>Thread take-up lever t.d.c. [°]</td>
<td>45 – 53</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The position for the t.d.c. thread take-up lever is entered here. If the function is executed, the position can be set by turning the balance wheel. The access code is necessary for this adjustment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>022</td>
<td>Thread trimming position (in relation to t.d.c. needle) [°]</td>
<td>180 – 253</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The position, at which the thread trimming solenoid is switched on, is entered here. The adjustment is set by turning the balance wheel. The access code is necessary for this adjustment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>023</td>
<td>Sewing area size X [1/10 mm]</td>
<td>±200</td>
<td>-100 / +200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To avoid mechanical collisions, the sewing area size of the clamp in use is entered. The control unit checks the path and, if necessary, issues an error message.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>024</td>
<td>Sewing area size Y [1/10 mm]</td>
<td>±100</td>
<td>-15 / +15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To avoid mechanical collisions, the sewing area size of the clamp in use is entered. The control unit checks the path and, if necessary, issues an error message.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Adjustment

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Setting range</th>
<th>Set value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>101</td>
<td><strong>Software version main processor</strong>&lt;br&gt;The software version of the main processor is displayed</td>
<td></td>
<td>0335/xxx</td>
</tr>
<tr>
<td>102</td>
<td></td>
<td><strong>Software version sewing drive unit</strong>&lt;br&gt;The software version of the sewing drive module is displayed.</td>
<td></td>
<td>V.xx</td>
</tr>
<tr>
<td>103</td>
<td></td>
<td><strong>Software version control panel</strong>&lt;br&gt;The soft- and hardware version of the control panel are displayed.</td>
<td></td>
<td>V.xxx/ H.xxx</td>
</tr>
<tr>
<td>600</td>
<td>601</td>
<td><strong>Display inputs</strong>&lt;br&gt;With this function the digital inputs can be checked. “IN” shows the input numbers (1 – 16). Under “VAL” the respective switch status is displayed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN VAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 IN1, programmable input 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 IN2, programmable input 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 E3, work clamp raised</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>602</td>
<td></td>
<td><strong>Display special inputs</strong>&lt;br&gt;With this function it is possible to check the special inputs pedal, reference X (SM1) and reference Y (SM2). “IN” shows the inputs (PED, REFX, REFY). Under “VAL” the respective switch status is displayed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN VAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PED Pedal (speed control unit -1; 0; +1; 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>REFX Reference input X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>REFY Reference input Y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Adjustment

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Setting range</th>
<th>Set value</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>603</td>
<td>Connect outputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With this function the outlets can be connected. &quot;OUT&quot; shows the outlet selected (1-16). Under &quot;VAL&quot; the selected output is set (S) with the plus/minus key (+), and reset (R) with the plus/minus key. Interlocks are checked. Non-assigned outlets are not connected.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>S/R Solenoid for work clamp open</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>S/R Solenoid for thread trimming</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>S/R Program outlet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>S/R Program outlet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>S/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>604</td>
<td></td>
<td>Move stepping motors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The stepping motors SM1 (X-axis) and SM2 (Y-axis) are moved individually with the respective plus/minus keys. Interlocks are not checked.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>605</td>
<td></td>
<td>Turn sewing motor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sewing motor can be operated with a selectable set speed by pressing the pedal. After the sewing motor has been started, the current speed is also displayed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>606</td>
<td></td>
<td>Thread trimming sequence</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sequence for a complete thread trimming cycle is started with the plus/minus key (+) below CUT and below THR.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Adjustment

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Setting range</th>
<th>Set value</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>607</td>
<td>Cold start (RESET)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With this function the control unit carries out a cold start (RESET) with which the data is reset. After this function has been selected, the machine must be switched off and then on again.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>608</td>
<td></td>
<td>Setting zero points</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With this function and the adjustment gauge, the zero points for the X/Y-drive unit can be set. (stepping motor correction values for the reference points REFX, REFY). The access code is required for this adjustment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>609</td>
<td></td>
<td>Setting the clamp centre X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This function is used to set the centre of the clamp in X-direction. When entering the function, the machine moves to the current clamp centre, after which it is possible to move to the right or left edge of the clamp, depending on the set limits (param. '023'). A correction can be made with the plus/minus keys. The relocation value is displayed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>610</td>
<td></td>
<td>Setting the clamp centre Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This function is used to help set the centre of the clamp in Y-direction. After entering this function, the machine moves to the current clamp centre, after pressing a key to the front or the rear limit (param. '024'). The clamp must be shifted manually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>611</td>
<td></td>
<td>Automatic clamp opening off</td>
<td>ON - OFF</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With this function the automatic opening of the clamp after thread trimming can be switched off. After the machine has been switched off, the automatic clamp opening function is always activated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>612</td>
<td></td>
<td>Test function continuous start</td>
<td>ON - OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>


The function groups and the functions P1-P8 and C1-C3 can be released for manipulation (ON) or locked (OFF). If a function group is suppressed, its parameters cannot be changed until a valid access code has been entered. Once a valid access code has been entered, the suppression is cancelled until the machine is switched off.

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameter</th>
<th>Description</th>
<th>Setting range</th>
<th>Set value</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td></td>
<td>The function groups and the functions Programming the Function Keys P1-P8 and C1-C3 can be released for manipulation (ON) or locked (OFF). If a function group is suppressed, its parameters cannot be changed until a valid access code has been entered. Once a valid access code has been entered, the suppression is cancelled until the machine is switched off.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>801</td>
<td>Right of access function group 000</td>
<td>ON – OFF</td>
<td>ON</td>
<td></td>
</tr>
<tr>
<td>802</td>
<td>Right of access function group 100</td>
<td>ON – OFF</td>
<td>ON</td>
<td></td>
</tr>
<tr>
<td>807</td>
<td>Right of access function group 600</td>
<td>ON – OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>808</td>
<td>Right of access function group 700</td>
<td>ON – OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>809</td>
<td>Right of access function group 800</td>
<td>ON – OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>810</td>
<td>Right of access to keys “P”, “P1” – “P8” and “C1” – “C3”</td>
<td>ON – OFF</td>
<td>ON</td>
<td></td>
</tr>
<tr>
<td>811</td>
<td>Access code</td>
<td>This parameter is used to alter the access code. Upon delivery the machine is set with the access code “3371”.</td>
<td></td>
<td>3371</td>
</tr>
</tbody>
</table>
14.32 Error messages on the display

Following error messages are shown on the control panel display.

**ERROR: 1** Processor error STACK_OVERFLOW
**ERROR: 2** Processor error STACK_UNDERFLOW
**ERROR: 3** Processor error UNDEF_OPCODE
**ERROR: 4** Processor error PROTECTION_FAULT
**ERROR: 5** Processor error ILLEGAL_WORD_OPERAND
**ERROR: 6** Processor error ILLEGAL_INSTRUCTION
**ERROR: 7** Processor error ILLEGAL_BUS_ACCESS
**ERROR: 8** Processor error NMI
**ERROR: 10** OTE (Sewing head recognition unit) not attached
**ERROR: 11** OTE not programmed (new)
**ERROR: 12** OTE check sum error
**ERROR: 13** OTE header invalid
**ERROR: 14** OTE user data invalid
**ERROR: 30(#)** (OTE error see cap. 14.34)
**ERROR: 31(#)** (Error Sewing motor see cap. 14.33)
**ERROR: 50** Incorrect control panel
**ERROR: 51** Incorrect machine class in OTE
**ERROR: 52** Incorrect software for main drive
**ERROR: 101** Mains voltage
**ERROR: 102** Power supply overload
**ERROR: 103** 24 V too low
**ERROR: 201(#)** (Error Sewing motor see cap. 14.33)
**ERROR: 202** Pattern too large
**ERROR: 203** Overload data transfer sewing motor
**ERROR: 204** Tacting function locked
**ERROR: 205** Run function locked
**ERROR: 206** No NIS
**ERROR: 207** Not end of ramp
**ERROR: 208** Zero point not found
**ERROR: 209** Sewing function locked
**ERROR: 210** Bobbin thread fault
**ERROR: 211** Stitch too large
ERROR: 301  Raise clamp not completed
ERROR: 302  Lower clamp not completed
ERROR: 303  Raise clamp locked (needle position)
ERROR: 304  Lower clamp locked (needle position)
ERROR: 305  Thread wiper on locked (needle position)

ERROR: 401  Error sewing motor
ERROR: 402  Overload data transfer sewing motor
ERROR: 403  Program station not programmed
ERROR: 404  Program locked
ERROR: 405  Program does not exist
ERROR: 406  No NIS
ERROR: 407  Zero points invalid
ERROR: 408  Machine not in basic position
ERROR: 409  Zero point not found

14.33  Sewing motor errors

1  Time out
9  Position not reached
34  Brake path too short
35  Communication error
36  Initialisation (Init.) not completed
65  Extint low at Init
66  Short circuit
68  Extint low in operation
69  No increments

70  Motor blocking
71  No incremental connector
73  Motor running interrupted
75  Controller locked
170  Invalid transmission
171  Zero mark invalid
175  Start error
222  Time-out monitoring

14.34  OTE-errors  [Sewing head recognition unit]

1  Read error
2  Write error
3  Full EEPROM
4  No EEPROM
5  Invalid size
6  Invalid address
7  Address overflow
8  Checksum falled
9  Serialnr. changed
Circuit diagrams

Circuit diagram reference list

A1 Controller Quick P320MS
A2 Control panel S2
A14 Sewing head recognition system (OTE)
B2 Hybrid light barrier Y axis
B3 Hybrid light barrier X axis
H1 Sewing lamp
M1 Sewing motor
M2 Stepping motor Y axis
M3 Stepping motor X axis
Q1 Main switch
S1 Pedal speed control unit
X1 Mains switch
X1A Control panel S2
X1B Sewing head recognition system (OTE)
X3 Incremental transmitter (sewing motor)
X4A Stepping motor + hybrid light barrier Y axis
X4B Stepping motor + hybrid light barrier X axis
X5 Inputs
X8 Sewing motor
X11A CAN interface
X11B Pedal speed control unit
X13 Outputs
X21 Hybrid light barrier X axis
X22 Hybrid light barrier Y axis
X23 Hybrid light barrier clamp monitoring
X41 Clamp open
X43 Thread trimming
X44 Thread wiper
Y1 Clamp open
Y3 Thread trimming
Y4 Thread wiper
PFAFF Industrie Maschinen AG

Postfach 3020
D-67653 Kaiserslautern

Königstr. 154
D-67655 Kaiserslautern

Telefon: (0631) 200-0
Telefax: (0631) 17202
E-Mail: info@pfaff-industrial.com